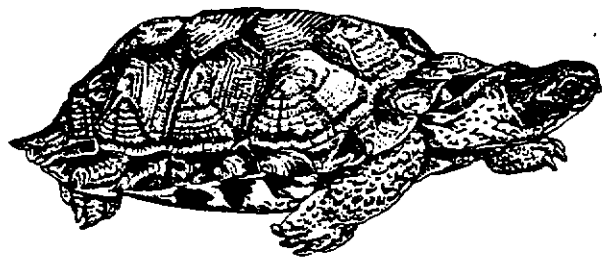
Natural Heritage &
Endangered Species
Program

Commonwealth of Massachusetts
Division of Fisheries & Wildlife
Route 135
Westborough, MA 01581
(508) 792-7270

MASSACHUSETTS SPECIES OF SPECIAL CONCERN

Wood Turtle
(Clemmys insculpta)

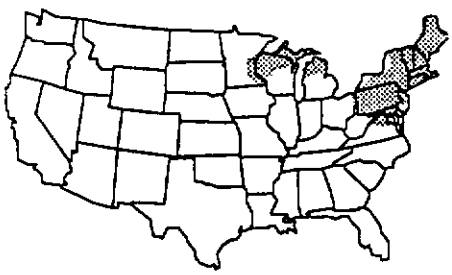
DESCRIPTION: The Wood Turtle is one of the most terrestrial of North American turtles. It is a medium sized turtle and the largest member of its genus, ranging from 12–23 cm (5–9 in) in length. The Wood Turtle is so named because the roundish segments of its upper shell (carapace) resemble a wood-grained cross-section of a branch complete with growth rings. The carapace is characteristically rough and is sculptured with grooves and ridges that rise upward to form individual pyramids. The raised pyramid-like shields, prominent central keel, and slight upward flare of the pointed posterior marginals give this turtle its unique shape. It is this sculptured appearance that has earned the Wood Turtle its species name insulpta.



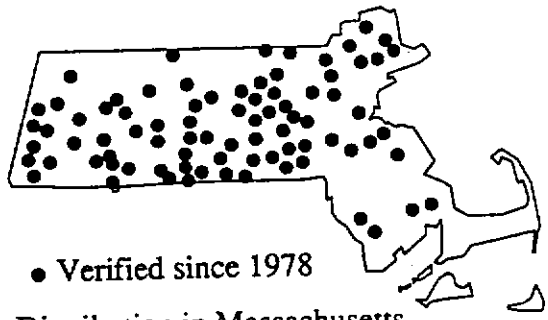
DeGraaf, Richard M. and Rudis, Deborah D. Amphibians and Reptiles of New England. Amherst, Massachusetts: The University of Massachusetts, 1983.

The carapace is brown, often with yellow streaks radiating from protruding black flecked centers. The undershell (plastron) is bone yellow with an irregular black blotch on the outside posterior corner of each scute (plate-like scale). The head, top of the neck and tail, and the outer scales of the legs and the claws are black. The undersides of the neck and legs are orange or red thus giving rise to the vernacular name "redlegs"; used during the early part of the 20th century when these turtles were sold as food. The legs are clad with thick protective scutes, particularly on the male. The sides of the head are arched downward, and this trapezoid shape, along with moist dark eyes, gives the Wood Turtle a sad look.

Males can be distinguished from females by their longer, thicker tail, a concave plastron with a deeply notched rear margin, and prominent scales on the front of the forelegs. Males are generally larger than females. Young are a gray brown with no red or orange color, the shell is keelless, and the tail as long as the carapace.



Range of the Wood Turtle



• Verified since 1978

Distribution in Massachusetts

SIMILAR SPECIES IN MASSACHUSETTS: The habitat of the Eastern Box Turtle (Terrapene carolina) and the Blanding's Turtle (Emydoidea blandingi) may overlap that of the Wood Turtle, but neither has the Wood Turtle's pyramidal shell segments. Unlike the Wood Turtle, the Box and Blanding's Turtle have hinged plastrons into which they can withdraw or partially withdraw if threatened. The Northern Diamondback Terrapin (Malaclemmys terrapin) has a shell similar to that of the Wood Turtle, but its skin is grey and it lives only near saltwater (which the Wood Turtle avoids).

RANGE: The Wood Turtle can be found throughout New England, north to Nova Scotia, west to eastern Minnesota, and south to northern Virginia.

HABITAT IN MASSACHUSETTS: The preferred habitat of the Wood Turtle is riparian areas. Slower moving streams are favored, with sandy bottoms and heavily vegetated stream banks. The bottoms and muddy banks provide hibernating sites for overwintering, and sandy or gravelly banks are used for nesting. The Wood Turtle spends most of the spring and summer in meadows and upland forests and returns to the streams in late summer or early fall to mate and overwinter. During the day, it is often seen in woodlands, hayfields, and along roadsides adjacent to streams.

LIFECYCLE/BEHAVIOR: The Wood Turtle has a way of life that makes it at home either in or out of the water. Next to the box turtle, it our most terrestrial species; possessing exceptional intelligence and a unique climbing ability. In southern or coastal areas of its range, the Wood Turtle becomes active in late March, but elsewhere it is usually mid-to late April or even May before it is sighted. Upon coming out of hibernation, the Wood Turtle begins its terrestrial activity by moving up on the river bank to bask in the sun. This species is diurnal (active by day), foraging in midday and sunning on logs in streams or along muddy river banks in the early morning and late afternoon. It is this habit of basking on the muddy river banks which has given the Wood Turtle the popular name "mud turtle." The Wood Turtle leads a rather solitary life and rarely will one find more than a single wood turtle at a time.

Wood Turtles remain relatively close to their streams and rivers, rarely getting more than a few hundred meters away from the banks. They have relatively linear home ranges that tend to run up to 1.6 km (a mile) in length. Males have been observed exhibiting aggressive behavior such as chasing, biting, and butting both during the mating season and at other times. This behavior appears to be more about social status than territorial ownership. Typically, one or both males make an "open mouth" gesture, snapping open and closing the mouth near the other's head, rarely resulting in actual biting. Prolonged interactions are often accompanied by audible hissing from one or both animals. Females tend to be more peaceable; interactions seldom involve more than a simple nose touching and departure.

The Wood Turtle becomes sexually active in the spring when the water temperature reaches 15 C (59 F). This species has a courtship ritual involving a "dance" that takes place for several hours prior to mating. The dance involves the male and female approaching each other slowly with necks extended and their heads up. Before they actually touch noses, they lower their heads and swing them from side to side. Courting adults may produce a very subdued whistle that is rarely heard by observers. These courtship behaviors occur on land, yet actual mating appears to take place only in the water.

The female Wood Turtle wanders in search of a nest site in late May or mid-June. She often digs her nest during or just after a slight rainstorm. Nest-digging can begin relatively early in the morning or late in the afternoon. The female Wood Turtle generally digs several six-inch holes before deciding on a definite nest site. The function of this may be to confuse nest predators that are searching for buried eggs. The female digs her nest using her hind feet only. The nest is a six-inch hole dug in sandy or soft loam sand areas, including gravel banks, roadsides, fields and meadows. It is generally high enough out of the river's floodplain to avoid inundation by fluctuating water levels. A clutch of 4 to 12 (generally 7 to 9) eggs are deposited inside the nest, covered with sand, and left to incubate for ten to sixteen weeks in the warmth of the sun. The eggs are white, smooth, and elliptical measuring 3.4 cm (1.4 in) in length and 2.4 cm (0.95 in) in width. From beginning to end, the nesting process may take three or four hours. Wood turtles lay only one clutch per year.

Hatchlings may leave the nest immediately or may remain in the nest over the winter and emerge in early spring. The young turtles are miniatures of the adults but have long tails. Once out of the nest, the young seek out the deep portions of streams where they virtually disappear until they become sexually mature at the age of twelve to fifteen years. The life span of the adult Wood Turtle is easily 50 years and may frequently reach 80 years of age.

The Wood Turtle is omnivorous and an unusual member of its family in that it exploits both aquatic and terrestrial food sources. Its diet consists of plant material from algae and grasses to berries and animal matter including insects, fish, earthworms, tadpoles, and carrion from many kinds of animals. The Wood Turtle often exhibits an unusual feeding behavior referred to as "stomping." In its search for food, this species will stomp on the ground alternating its front feet, creating vibrations in the ground resembling rainfall. Earthworms, responding as though to rainfall, rise to the ground's surface to keep from drowning. Instead of rain, the earthworm is met by the Wood Turtle, and is promptly devoured.

In October, the Wood Turtle returns to the deep channels of streams for the winter. With head and limbs tucked in under the carapace and tail extended, it lies next to submerged anchored stumps and logs on the sides of the stream away from the main current. It also may hibernate in large groups in community burrows which may include muddy banks, stream bottoms, deep pools, decaying forest vegetation, and abandoned muskrat burrows.

POPULATION STATUS IN MASSACHUSETTS: The Wood Turtle is listed as a "Species of Special Concern" in Massachusetts. Since 1978, there have only been 153 sightings reported to the Massachusetts Natural Heritage and Endangered Species Program in 97 different locations across the state. It should be noted that these sightings are not indicative of populations but may be road crossing sightings or single individuals. Population decline of this species has been caused by pollution of streams, development of wooded streambanks, the unnatural increase in predation due to human presence, highway casualties, and extensive commercial and incidental collection of specimens for pets. Wood turtles are also killed during hay-mowing operations.

MANAGEMENT RECOMMENDATIONS: In order to ensure the longevity of the Wood Turtle as a species, the following recommendations regarding specific habitat preservation are suggested. In reference to timber harvesting, the primary concerns are the preservation of the local environments near streams and the prevention of siltation. Establishment of a minimum 50-foot no-cut buffer zone along the streams and rivers; the implementation of erosion controls that may be appropriate for the specific site (particularly recommended in steep slope situations); and utilization of portable or temporary bridges rather than fording to cross streams are strongly suggested. Selective rather than regeneration cutting within 50-300 feet of streams known to be inhabited by Wood Turtles may also help to maintain suitable habitat for this species. Wood Turtles often use clearings and meadows and would probably benefit from slash piles. Avoid use of heavy equipment within 50 feet of streams and minimize use 50-100 feet from streams.

Enforcement of the Massachusetts Endangered Species Act is also needed to protect this species from the pet trades and biological supply. In a five-year study in Pennsylvania by John H. Kaufmann, research showed that though this species is long lived, population data may be misleading as the individuals sighted were older turtles, and not reproducing at a sustainable population rate. It is estimated that there may be as much as a 99% mortality rate from hatching to adulthood (Robakiewicz). In small populations such as those in Massachusetts, such a high mortality rate could prove disastrous.

In summary, the Wood Turtle populations and their habitats need protection This species is attracted to tangles of vegetation, though the specific type of plant matter appears to be unimportant. Not mowing within 100 meters (100 yds) of stream banks encourages woody vegetation such as gray dogwood to flourish. In upland sites, fallen trees should be left. Meadows dense with many layers of vegetation are preferred by Wood Turtles over well-mown lawns. Encourage brushy tangles and get local gardeners to allow a few tomatoes and strawberries to run rampant so that turtles can harvest some of the fruit. Protecting riverine corridors is important to prevent fragmentation of habitats and populations. In addition, protecting wetlands and water quality is critical as these turtles show a tendency to return to the same stream each year, and they are sensitive to pollution (Robakiewicz).

BIBLIOGRAPHY

Babcock, H.L. Turtles of the Northeastern United States. New York: Dover Publications, 1971.

Brynildson, Inga. Wood Turtle Fact Sheet. Madison, Wisconsin: Bureau of Endangered Resources, 1985.

Conant, Roger and Collins, Joseph T. A Field Guide to Reptiles and Amphibians—Eastern and Central North America. Boston: Houghton Mifflin Company, 1991.

DeGraaf, Richard M. and Rudis, Deborah D. Amphibians and Reptiles of New England. Amherst, Massachusetts: The University of Massachusetts, 1983.

Harding, James H. and Bloomer, Tom J. "The Wood Turtle, Clemmys insulpta: A Natural History," Herp Bulletin of the New York Herpetological Society, Vol.15, Number 1, 1979, pp. 9-26.

Hunter, Malcolm L.,Jr.; Albright, John; and Arbuckle, Jane, ed. The Amphibians and Reptiles of Maine. Bulletin 838, The Maine Amphibian and Reptile Atlas Project. Orono, Maine: University of Maine, Maine Agricultural Experiment Station, July 1992.

Gilhen, J. Amphibians and Reptiles of Nova Scotia. 1984.

Kaufmann, John H. "The Wood Turtle Stomp," Natural History, August 1989, pp. 9-11.

Lazell, James. Reptiles and Amphibians of Massachusetts. Lincoln, Massachusetts: Massachusetts Audubon Society, 1974.

Robakiewicz, Phil. "The Wise Old Wood Turtle," Massachusetts Audubon Society/Sanctuary Magazine, May/June 1993, pp. 8-11.

Tyning, Thomas F. A Field Guide to Amphibians and Reptiles. Boston: Little, Brown and Company, 1990.

Vogt, R.C. Natural History of Amphibians and Reptiles of Wisconsin. 1981.

Partially funded by a grant from DEM Forest Stewardship Program